

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 August 2007 (23.08.2007)

PCT

(10) International Publication Number
WO 2007/095553 A3

(51) International Patent Classification:

G06K 9/40 (2006.01)

(21) International Application Number:

PCT/US2007/062090

(22) International Filing Date:

13 February 2007 (13.02.2007)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/773,714 14 February 2006 (14.02.2006) US

11/674,633 13 February 2007 (13.02.2007) US

(71) Applicant (for all designated States except US): FOTO-NATION VISION LIMITED [IE/IE]; Galway Business Park, Dangan, Galway City, County Galway (IE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): CIUC, Mihai [RO/RO]; Str. Latea Gh. 17, BI C60, Sc. 1, Ap. 45, Sector 6, R-768043 Bucuresti (RO). NANU, Florin [RO/RO];

Str. Izvorul Muresului, Nr13, Bi D22, Sc D, Ap 32, Sector 4, Bucuresti (RO). PETRESCU, Stefan [RO/RO]; Str. Cap. Gheorghe Ion Nr.4, Bi.73, Sc.3, Et.2, Ap.37, Sector 4, Bucharest (RO). CAPATA, Adrian [RO/RO]; Bd. Iancu De Hunedoara Nr. 25, Bl.2, Sc. A, Ap. 53, Sector 1, Bucuresti (RO). VERTAN, Constantin [RO/RO]; 15, Bd. Eroilor, Bi. A3, Sc. B, Apt. 10, Sect V, Bucuresti (RO). CORCORAN, Peter [IE/IE]; 57 Sceilg Ard, Headford Road, Cregg, Claregalway, Co. Galway (IE). BIGIOI, Petronel [RO/IE]; 57 Sceilg Ard, Headford Road, Galway, Co. Galway (IE). STEINBERG, Eran [IL/US]; 137 Granville Way, San Francisco, CA 94127 (US).

(74) Agent: SMITH, Andrew, V.; Fotonation IP Dept, 800 Airport Blvd., Suite 522, Burlingame, CA 94010 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY,

[Continued on next page]

(54) Title: AUTOMATIC DETECTION AND CORRECTION OF NON-RED EYE FLASH DEFECTS

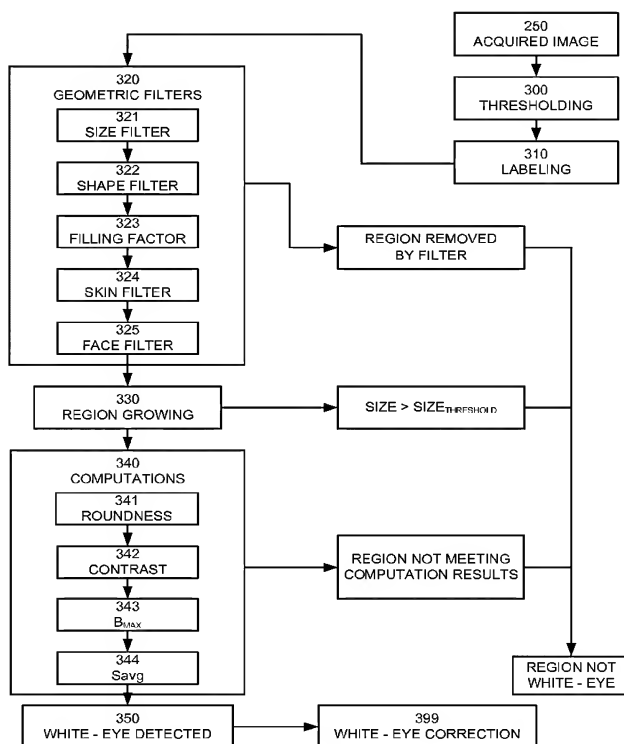


FIGURE 3

(57) Abstract: A technique for detecting large and small non-red eye flash defects in an image is disclosed. The method comprises selecting pixels of the image which have a luminance above a threshold value and labeling neighboring selected pixels as luminous regions. A number of geometrical filters are applied to the luminous regions to remove false candidate luminous regions.

WO 2007/095553 A3



MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS,
RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

Published:

— *with international search report*

(88) Date of publication of the international search report:
14 August 2008

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/62090

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06K 9/40 (2007.01)

USPC - 382/275

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): G06K 9/40 (2007.01)

USPC: 382/275

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC: 382/167, 190, 159 (text search)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST(USPT,PGPB,EPO,JPO,DERWENT); DialogPRO(Engineering); Google

Search terms: no red eye bright flare white reduction effect defect filter remove process edit image photo photograph luminance bright threshold minimum maximum max min score

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/0238230 A1 (YOSHIDA) 27 October 2005 (27.10.2005), fig 4-8, para [0042], [0045]-[0064], [0072].	1-20
A	US 5,748,764 A (BENATI et al.) 05 May 1998 (05.05.1998), fig 4; col 1, ln 65 to col 2, ln 47; col 4, ln 1-5; col 6, ln 16-55; col 9, ln 8-26.	1, 9 and 11
A	US 2004/0047491 A1 (RYDEK) 11 March 2004 (11.03.2004), para [0010]-[0013], [0035]-[0037], [0053].	1, 9 and 11

☐ Further documents are listed in the continuation of Box C.


* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

27 August 2007 (27.08.2007)

Date of mailing of the international search report

10 MAR 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774